

### **REMARKS/ARGUMENTS**

Claims 1-3 and 6-8 stand rejected as anticipated by U.S. Patent 5,862,858 to Wellington. The rejection is respectfully traversed. To begin with, anticipation as to 102(b) requires that each and every element of the claims be met by the reference. This is not the case with respect to Wellington. Claim 1, prior to the present amendment, stated that the catalytic material reacts with the hydrogen-containing gas in the presence of an oxidizing gas, to produce an exothermic reaction and a temperature sufficient to cause auto ignition of a hydrogen-containing gas. As now amended, Applicant has added the phrase, "to produce a flame" to clarify that Applicant's igniting apparatus is not a heating device but an igniter. In this regard, as set forth on page 4 under "SUMMARY OF THE INVENTION", lines 1-15, it is pointed out that the present invention, is an "ignition system" which will "ignite a combustible fuel" and, as seen particularly in lines 7-12 produces a "pilot flame" which can then be used to ignite a fuel mixture. Wellington discloses no such structure, and accordingly, cannot be an anticipating reference.

One of the goals of the Wellington invention is to produce flameless combustion adjacent to the catalyst surfaces, thereby avoiding a flame as a radiant heat source (see column 4, lines 26-42.) Further, in column 2, lines 1-15 under "SUMMARY OF THE INVENTION", Wellington points out that the invention includes "a catalyst surface within the combustion chamber wherein the catalyst surface is effective to cause oxidation of an amount of fuel, wherein the

oxidation of the amount of fuel does not result in a temperature below the uncatalyzed auto ignition temperature of the fuel and oxygen mixture." This is exactly contrary to Applicant's invention, which is to produce a flame. As Wellington further points in column 2, lines 17, et. seq., the "flameless combustion" results in minimal production of nitrous oxides and in column 2, lines 32, et. seq., states that the "flameless combustor" of the present invention, is for use as a heat injector for heating subterranean formations.

The goal of the Wellington reference is to provide a heat source, which can be used to inject heat into a subterranean formation for the recovery of hydrocarbons.

Applicant's invention, on the other hand, is directed towards providing an ignition system which can produce a flame, which in turn can be propagated into a burner ignition zone to ignite a fuel mixture supplied to suitable burner(s).

Thus, Applicant's invention and the Wellington invention have two different goals - the goal of the Wellington invention being to provide a heat source to heat the subterranean formation, the goal of Applicant's invention being to produce a flame, which can in turn ignite a combustible gas which can in turn heat a subterranean formation.

To the extent Wellington discloses a "flame," the Examiner's attention is directed towards column 5, lines 9 et. seq. In the cited lines, Wellington points out that in cold startup of the well heater of the present invention, a flame can be employed. In this regard, the cited lines teach that the ignition can be

accomplished by injecting pyrophoric material, an electrical igniter, a spark igniter, temporarily lowering an igniter into a wellbore, or by electrical resistance heater.

The cited lines set forth the stark differences between the Wellington invention and Applicant's invention. As noted above, in the "cold startup" according to Wellington, some sort of igniter is needed; i.e., the cited lines point directly to the fact that Applicant's invention would be quite useful in the Wellington invention. In other words, in Wellington, to initiate startup of the system, some sort of flame, i.e., an ignition source is necessary. Other than that, Wellington does not want a flame, as made abundantly clear throughout the Wellington reference. In effect, the cited lines in column 5 point directly to the need for Applicant's invention, since Wellington requires some sort of an initial ignition source. However, the ignition source disclosed by Wellington in the cited line in no way resemble resembles Applicant's ignition apparatus, and in fact, discloses systems which are more complicated, cumbersome and more expensive. There is no doubt that by adding Applicant's invention to the Wellington system, Wellington would have a better system.

Further, while the goal of Applicant's invention is to produce a flame, albeit a pilot flame and albeit for a brief period of time, Wellington does not want a flame.

Thus, in column 5, lines 13-16, it is stated "the burner is preferably rapidly brought to a temperature at which a flameless, combustion is sustained to

minimize the time period of which a flame exists within the wellbore." The cited lines should not be more clear in teaching that if it can be avoided, a flame is not desired in the Wellington invention. It is respectfully submitted that Claim 1 is not anticipated by Wellington. With respect to Claims 2-4 and 6-8, since those claims all depend upon Claim 1 and further limit Claim 1, it is clear that they are likewise not anticipated by Wellington.

Claim 4 stands rejected as obvious over Wellington in view of U.S. Patent 6,446,426 to Sweeney. This rejection is also respectfully traversed. Claim 4 depends upon Claim 1. The infirmities of Wellington vis-à-vis Claim 1 have been discussed above. Those infirmities are not cured by resort to Sweeney. For example, Sweeney does not suggest an ignition system that produces a flame; e.g., pilot flame, to subsequently ignite a combustible gas mixture. Accordingly, it is respectfully submitted that Claim 4 is patentable over Wellington in view of Sweeney.

Claim 17/1 is rejected as unpatentable over Wellington. This rejection is also respectfully traversed. As noted above, Claim 1 does not anticipate Wellington. Accordingly, since Claim 17/1 is a dependent claim which further limits Claim 1, it is respectfully submitted that it is likewise patentable over Wellington.

Not only does Wellington not suggest Applicant's invention as set forth in amended Claim 1, it teaches toward the need of Applicant's invention, as pointed out above in the discussion of the teachings of the Wellington invention in column

5, lines 9-18. The whole thrust of the Wellington invention is a "flameless combustor." The Wellington reference was discussed by Applicant on page 3, lines 4-12 of Applicant's specification. As was pointed out in that paragraph, flameless combustors of the type of Wellington operate by preheating a fuel and combusting it to a temperature above an auto ignition temperature of the mixture. Applicant's invention does not require any preheating of a fuel. Rather, Applicant's igniter, spontaneously produces a flame without preheating of any fuel and oxygen-containing mixture. The two inventions could not be more different.

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims are patentable over Wellington, alone or combined with Sweeney.

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims are in condition for allowance which is hereby earnestly solicited and respectfully requested.

Respectfully submitted,

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